

IN THE CLAIMS:

1. (Previously Presented) Humidification apparatus for providing humidified gas to a patient or other person in need of such gas comprising:

an inlet for receiving gas,

a humidifier configured to provide water vapour to at least some of said gas received at said inlet so that at least some of the received gas is humidified and/or heated,

an outlet through which humidified and/or heated gas is discharged from the humidifier,

an air heater configured to directly heat at least some of said gas passing through said humidification apparatus, in parallel to said humidifier,

at least one sensor configured to provide an indication of at least two of, relative humidity, absolute humidity and temperature of said gas,

a controller or processor configured to energise said humidifier and said air heater to achieve a combination of any two of predetermined absolute humidity, predetermined relative humidity and predetermined temperature of said gas.

2. (Previously Presented) Humidification apparatus as claimed in claim 1 wherein said sensor comprises an absolute humidity sensor for providing an indication of the absolute humidity of said gas at at least one point in the flow path of said gas through said apparatus and wherein said humidifier includes a body of liquid water.

3. (Previously Presented) Humidification apparatus as claimed in claim 2 wherein said humidifier comprises a metal spiral element to heat said body of water.
4. (Previously Presented) Humidification apparatus as claimed in claim 2 wherein said humidifier comprises a heated porous ceramic member adapted to be in contact with said body of water and said gas.
5. (Previously Presented) Humidification apparatus as claimed in claim 2 wherein said humidifier comprises a heated semipermeable membrane adapted to be in contact with said body of water and said gas.
6. (Previously Presented) Humidification apparatus as claimed in claim 1 wherein said air heater has a humidification bypass, for allowing a portion of said gas to flow from said inlet to said outlet substantially without humidification.
7. (Currently Amended) Humidification apparatus as claimed in claim 6 wherein said humidifier includes a body of liquid water, said humidification bypass includes a bypass conduit at least partially passing through said body of water for conveying a portion of said gas from said inlet to said outlet, substantially without humidification, and a valve is provided in said to allow restriction of the portion of said gas passing through said bypass conduit, the gas flowing through said bypass conduit being heated by the surrounding said body of water.

8. (Previously Presented) Humidification apparatus as claimed in claim 6 wherein said humidification bypass includes a bypass conduit for conveying a portion of said gas from said inlet to said outlet substantially without humidification, a bypass heater adapted to heat the portion of said gas in said bypass conduit and/or said bypass conduit, and a valve provided to allow restriction of the portion of said gas in said bypass conduit.
9. (Previously Presented) Humidification apparatus as claimed in claims 7 or 8 wherein the restriction of the flow rate provided by said valve is in use permanently set.
10. (Previously Presented) Humidification apparatus as claimed in claims 7 or 8 wherein the restriction of the flow rate provided by said valve is in use manually adjustable.
11. (Previously Presented) Humidification apparatus as claimed in claims 7 or 8 further comprising a flow sensor providing an indication of the instantaneous flow rate of said gas, through said humidification apparatus, wherein said controller or processor is configured to control the restriction provided by said valve based on said indication of instantaneous flow rate of said gas, in order that the gas exiting from said outlet is of substantially constant humidity.
12. (Previously Presented) Humidification apparatus as claimed in claims 7 or 8 wherein said valve comprises an electromechanical actuator connected to a valve member wherein the energisation of said electromechanical actuator varies the position of said valve member thereby varying the restriction provided by said valve.

13. (Currently Amended) Humidification apparatus as claimed in claims 7 or 8 wherein said valve comprises either a valve member connected to an elastic member ~~or an elastic valve member~~ wherein said valve is positioned in said flow of gas at or near said inlet and the position of said valve member ~~or said elastic valve member~~ thereby determines the portion of said gas passing through said bypass conduit.

14. (Currently Amended) Humidification apparatus as claimed in claim 13 wherein the position of said valve member ~~or said elastic valve member~~ provides an indication of the rate of flow of said gas at said inlet.

15. (Previously Presented) Humidification apparatus as claimed in claims 1 or 2 further comprising a conduit to convey said gas from said outlet to a patient and including insulation adapted to minimise the rate of heat energy lost by said gas in said conduit, said controller adapted to energise said humidifier and said air heater to minimise the condensation of the vapour from said gas in said conduit while providing a predetermined levels of absolute humidity.

16. (Cancelled)

17. (Cancelled)